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PATENTS IN SPACE

AUGUST 13, 1986.—Ordered to be printed

Mr. KASTENMEIER, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H.R. 4316 which on March 5, 1986, was referred jointly to the Committees on the Judiciary and Science and Technology]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 4316) to amend title 35, United States Code, and the National Aeronautics and Space Act of 1958, with respect to the use of inventions in outer space, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

PURPOSE

The purpose of the legislation is to amend title 35 and the National Aeronautics and Space Act to assure adequate patent protection to inventions made in outer space. The bill provides a clear, definite and understandable set of rules for determining when and how U.S. patent law applies in outer space.

INTRODUCTION

H.R. 2725 was originally suggested in legislative form by the National Aeronautics and Space Administration (NASA). NASA has proposed a similar provision in section 7 of H.R. 1714, the NASA authorization bill. At the request of the Committee on the Judiciary, the Committee on Science and Technology agreed to delete the subject of patents in space from the NASA authorization bill. As a result, the two committees cooperated in drafting and forwarding this legislative initiative.

The major impetus for this legislation is the expanded availability of commercially relevant activities in outer space. The growing

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use of the Space Shuttle and other space craft has made very real the likelihood that numerous inventions will be made or used in an outer space environment. This bill responds by furthering the possibilities of investment in space through the creation of a concrete set of rules concerning patentability.

BACKGROUND

On July 20, 1984, the 15th anniversary of the landing of man on the surface of the Moon, President Reagan publicly embraced, as an extremely important part of his national policy, the commercial use of space. In his remarks at a White House ceremony marking the anniversary, the President stated in part:

> . . . we would soon develop initiatives to help promote private sector investment in space, and we're now embarking on that course. We'll do all we can to ensure that industry has a routine access to space and a suitable, reliable place to work there. And we'll do this without needless regulatory constraints.

In response to the President's policy of encouraging the commercialization of space, NASA undertook a review of intellectual property law to determine whether those statutes or cases posed an impediment to the full exploitation of outer space. NASA concluded that the case by case judicial determination of whether the United States patent law applies to outer space activities should be avoided. NASA, therefore, urged Congress to act legislatively to provide certainty and clarity to United States patent law on this issue. As NASA told the Committee:

> One important practical effect of this approach would be to assure treatment of the presently operational space transportation system and eventually the space station, as a facility, in the same manner as a terrestrial base facility is presently treated in relation to invention and patents under title 35.[1]

The importance of the commercialization of space to the business community cannot be overstated. As a recent article in the *Atlantic Monthly* by David Osborne highlighted: "* * * hundreds of corporations are directly involved in the space business."[2] For these commercial concerns a conducive business environment necessarily included certainty in the area of intellectual property law.[3] Companies that are considering making major multi-million dollar investments in experiments in space want to know exactly what intellec-

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[1] NASA based this conclusion on the consistency of this policy with the so-called Outer Space treaty: (Treaty on Principles Governing the Activities of States in the Exploration of Outer Space, Including the Moon and other Celestial Bodies):

One interpretation of this treaty which essentially establishes a free space doctrine, is that the jurisdiction over legal events occurring on any object in space at no risk to the state party having jurisdiction over that party. If this is the correct interpretation, the amendment to the U.S. patent law as supported by NASA would not change current patent law but would provide certainty as to that issue. If, on the other hand, that is a doubtful interpretation, then NASA believes such amendments would be desirable to provide both clarity and certainty on the issue.

Patents in Space before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, 99th Congress, 1st Sess., (1985) (hereinafter *Hearing*) (testimony of S. Neil Hosenball).

[2] *Hearing*, (reprint of "Business Space" by David Osborne, ATLANTIC MONTHLY. (1985).

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tual property laws apply. These companies cannot afford the hesitation which would result from an ad hoc judicial determination of patent law issues. Moreover, United States resolution of this legal issue will dramatically affect how other space-faring nations deal with this issue.[4]

STATEMENT OF HEARING RECORD

During the 99th Congress the Committee held one day of hearings on H.R. 2725. The Subcommittee on Courts, Civil Liberties and the Administration of Justice heard testimony from S. Neil Hosenball, General Counsel, National Aeronautics and Space Administration and Donald Chisum, Professor of Law at the University of Washington Law School. Mr. Hosenball was accompanied by Robert Kempf, Assistant General Counsel of NASA.

The Committee received and made part of the hearing record letters from the following individuals and organizations in support of the legislation: Intellectual Property Owners, Inc., Pharmaceutical Manufacturers Association, American Astronautical Society, Aerospace Industries Association of America, Inc., National Association of Manufacturers, Johnson & Johnson, Schering-Plough, United States Department of State (J. Edward Fox, Legislative and Intergovernmental Affairs), American Intellectual Property Law Association, Hughes Aircraft Company, General Motors Corporation, World Intellectual Property Organization and Rochester Patent Law Association.

EFFECTS OF THE LEGISLATION ON UNITED STATES PATENT LAW

There are at least four important consequences of applying United States patent law to inventive activities which occur in outer space. First, this bill would make clear that actions which occur in outer space can infringe a United States patent. As one of the witnesses explained, the use of a patented process aboard a space vehicle to make a pharmaceutical product in outer space could constitute an act of infringement.[5]

The second effect on patent law made by these amendments is to rationalize priority of invention with respect to inventions in outer space. Under the bill, inventive activities in outer space can be used to establish when an invention was made (i.e. conceived). Because United States law is based on first-to-invent principles—rather than first-to-file—establishment of such a priority is a linch pin of our patent law. Without recognition that activities which occur in outer space are governed by United States patent law, it would be possible to argue that priority of invention could not be established based on such activity because it occurred outside the

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[3] *Hearings*, supra at 5 (reprint of "Patent Law Finds Space Applications" by Eugene Uoricharow, AVIATION WEEK AND SPACE TECHNOLOGY, June 25, 1984); *See also* Corrigan, "Space-Age Speculations Plan Orbit Industrial Parks with NASA's Help," NATIONAL JOURNAL, September 7, 1985.

[4] Luxenberg, "Protecting Intellectual Property in Space: Policy Options and Implications for the United States," (reprinted in *Hearings* supra at note 5 at 60).

[5] *Hearing* supra at 5 (testimony of Donald Chisum, Professor of Law, University of Washington); See generally, Chisum, *Foreign Activity: It's Effect on Patentability Under United States Law*, 11 IIC 26 (1980).

United States. Under United States law, inventive activities which occur outside the United States cannot be used to determine priority of invention. Thus, because the bill provides that making or using an invention in outer space shall be considered as occurring within the United States it clarifies that such acts can be used to establish an invention's priority.

The third way in which this bill affects United States patent law is to assure that activities in outer space will be treated as occurring in the United States for purposes of prior art. This adds needed conformity in determining patentability.

The final way in which these amendments affect United States Patent Law is with respect to invention secrecy. Inventions made in outer space, which met the conditions set forth in the bill, will be subject to the Invention Secrecy Act, 35 U.S.C. 181-188. As Professor Chisum has noted:

> Under that Act, a person may not file an application for a patent in a foreign country unless that person has either (1) filed an application in the United States and waited six months thereafter, or (2) obtained a license to file abroad from the Commissioner of Patents and Trademarks. The licensing requirement applies to inventions "made in this country." 35 U.S.C. Section 184. The penalty for violation of the requirement is severe: any patent obtained is invalid. 35 U.S.C. Section 185. The Commissioner may grant a retroactive license but only on a showing of "inadvertence."[6]

The legislation makes clear that the provisions of the Patent Secrecy Act apply when an invention is made in outer space on a vehicle under the jurisdiction of the United States. Otherwise, there may be no authority to require national security review before foreign filing.

SUPPORT FOR THE LEGISLATION

The Committee has received correspondence in support of H.R. 2725 from the Executive Branch, including the Department of State, Department of Commerce and the National Aeronautics and Space Administration. The Committee has also received letters in support from three intellectual property law organizations: (1) Intellectual Property Organization; (2) American Intellectual Property Law Association; and (3) the Rochester Patent Law Association. Various trade associations have enclosed the legislation: (1) Pharmaceutical Manufacturers Association; (2) American Astronautical Society; (3) Aerospace Industries Association of America, Inc.; and (4) National Association of Manufacturers.

Several individual companies have also expressed support for the bill including: (1) Schering-Plough; (2) General Motors; and (3) Hughes Aircraft Company.

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[6] *Hearings*, supra at note 5 (letter from Professor Donald Chisum to Representative Robert W. Kastenmeier, June 18, 1985) at 422.

PATENTS IN SPACE: CURRENT LAW

UNITED STATES LAW

There are no patent rights under the common law; therefore obtaining or enforcing a patent is governed by Title 35 of the United State Code. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor.[7] For infringement of a patent, remedy is by a civil action.[8] Such laws are territorial in nature, although the statutory definition of "United States" as "the United States of America, its territories and possessions, is descriptive rather than limiting."[9] The Supreme Court has stated that our patent system makes no claim to extraterritorial effect and was not intended to operate beyond the limits of the United States.[10] As a result, there is general agreement that "The laws relating to inventions and patents have no extraterritorial effect."[11]

There appears to be controversy about whether the patent laws can be given extraterritorial effect in the sense that they can apply to United States flag ships on the high seas and United States aircraft in airspace above the high seas. Courts have held that patent laws apply to any place under United States jurisdiction.[12] This theory of jurisdiction has even led one legal commentator to conclude that national patent laws thereby extend to all places over which sovereign rights are exercised, such as man-made installations on the continental shelf used for exploration and exploitation of the shelf, ships flying the national flag, aircraft registered in the country, and manned spacecraft over which it exercises sovereign rights.[13] On the other hand one court created a "fiction," finding that for the purpose of the patent laws, ships and planes are to be considered as United States territory. This holding has been criticized [14] by one court as a "judicial prop" to be avoided if a case can be decided on other grounds.[15]

As he stated:

> [T]he constitutional power of Congress to make our patent laws applicable to processes carried out on U.S. flag ships and planes is not challenged; the question is whether Congress has done so in view of the Supreme Court's doctrine of strict construction.
>
> Perhaps the patent bar will note the possible loophole in the coverage of the U.S. patent laws and will invite the attention of Congress to it.[16]

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[7] 35 U.S.C. 101.
[8] 35 U.S.C. 281.
[9] 35 U.S.C. 101(c).
[10] *Deepsouth Packing Co.* v. *The Laitram Corporation*, 406 U.S. 518, 531 (1972).
[11] Statement of S. Neil Hosenball, General Counsel, National Aeronautics and Space Administration, in *Patents in Space: Hearing Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary*, 99th Cong., 1st Sess. 5 (1985).
[12] See *Gardiner* v. *Howe*, 9 Fed. Cas. 1157 (1865).
[13] Stauder, *Patent Protection in Extraterritorial Areas (Continental Shelf, High Seas, Air Space, and Outer Space)*, 7 IIC 470, 478 (1976), (reprinted in *Hearing*, at 119, 127).
[14] See, for example, *Decca Limited* v. *United States*, 544 F.2d 1070, 1073–1074 (Ct. Cl. 1976).
[15] *Ocean Science & Engineering, Inc.* v. *United States*, 595 F.2d 572, 574 (Ct. Cl. 1979).
[16] *Id.*

Thus, with respect to extending patent laws to space vehicles, two possibilities exist. First, several cases concerning "reduction to practice" of an invention have found either that testing is or has to be done on the Earth, or that the invention is an integrated instrumentality with the control point on Earth. For an invention intended ultimately for use in outer space, some type and degree of testing on Earth may be sufficient to constitute an actual reduction to practice under patent law.[17] If an invention is of such magnitude that it necessarily extends beyond the United States, such as a satellite system which can be viewed as the operation of an integrated instrumentality with its control point in the United States, the inventive act has been considered as occurring in the United States.[18] Under either of such findings the patent laws would be applied territorially. Second would be the more difficult instance where an invention is intended for sole use in outer space, is only tested there, is not part of an integrated instrumentality, and perhaps is invented on a flight that is a joint effort with another nation. In such event, the application of the patent laws could only be justified by invoking sovereign jurisdiction. Thus, an invention made aboard an orbiting space vehicle might arguably be within the patent law of the state of registry, which owns and controls the vehicle.[19] Even if there are other nationals on board, since jurisdiction rather than nationality would be the governing factor, the passengers would arguably be subject to the laws of the state of registry.[20] If the flight is a joint effort, the particular circumstances of the project as a whole would have to be examined to find United States involvement sufficient to constitute grounds for an infringement action in the United States.[21]

It would also seem possible to argue that the policy reasons for not giving the patent laws extraterritorial effect are not present in situations involving outer space. "A major reason for this limitation is the avoidance of interference with the sovereignty of other countries, which may have patent laws that differ from those of the United States." [22]

The disposition of property rights in inventions made under a NASA contract are governed by Section 305 of the National Aeronautics and Space Act of 1958,[23] which provides for the issuance of a patent to the United States if the invention is patentable, unless such right is waived by the United States in whole or in part. That law attempted to strike a balance between a strict title policy and a license policy under which the government would merely take a license to inventions and leave title or commercial rights with the

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[17] Kempf, *Reduction to Practice of Space Inventions*, 50 J. Pat. Off. Soc. 105, 111 (1968), in *Hearing*, at 172.

[18] *Rosen* v. *National Aeronautics & Space Administration*, 152 U.S.P.Q. 757 (1966).

[19] Saragovitz, *The Law of Intellectual Property in Outer Space*, 17 IDEA 86, 88–94 (1975), *(reprinted in Hearing*, at 367–371). This, apparently, is the issue pending in a case on appeal in the Court of Appeals for the Federal Circuit, *Hughes Aircraft Company* v. *United States*.

[20] *Id.*, at 94.

[21] *Hughes Aircraft Co.* v. *Messerschmitt-Boelkow-Blohm*, 625 F.2d 580 (5th Cir. 1980).

[22] Statement of Professor Donald S. Chisum, in *Hearing*, at 18.

[23] 42 U.S.C. § 2457.

contractor.[24] As a practical matter, patent rights are negotiated between the parties and set forth in the joint endeavor agreement.[25]

INTERNATIONAL LAW

Assuming that it can adequately be demonstrated that the United States patent laws apply to flag vessels on the high seas and to United States aircraft in flight above the high seas, would or could that analogy be extended to include United States spacecraft in outer space? In other words, does the United States exercise sovereign jurisdiction over such a craft and its crew and passengers? Answers do not appear clear or convincing.

At least three distinct postures can be taken on the issue. First, under a free space concept as declared in the Outer Space Treaty,[26] the state of registry of an object launched into outer space retains jurisdiction and control over such object and its personnel while in outer space. Registry of a spacecraft is similar to the registry of an ocean going vessel. The analogy between space law and the law of the sea is obvious. As one commetator put it:

> "It is submitted that whenever the United States constructs and orbits a spacecraft, any legally relevant events, such as the operation and testing of an invention in its intended functional setting, comes within the jurisdiction of the United States and as such the invention may be considered as being reduced to practice in the United States under patent law." [27]

Additional support for this position may be gleaned from the Outer Space Liability Convention,[28] establishing absolute liability of the launching State for damages, and the Registration Convention,[29] which requires a launching State to enter each launching in an appropriate registry. "As a result the Registration Accord proves to be thoroughly suitable as a foothold for the determination of applicable law. The prerequisite for the application of the law of the recording state to bodies in outer space under its jurisdiction and control is concrete, of course, and an explicit or at least implicit extension of the national law to these space bodies operating in the extraterritorial region." [30] Second, when read together, Articles II and XI of the Outer Space Treaty detract from the assertion of sovereign rights that can lead to the extension of patent laws. Article II provides that no claim of sovereignty can be made to outer space. Article XI provides that the Secretary-General of the United Nations is to be notified of the nature, conduct, location

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[24] Mossinghoff, *Intellectual Property Rights in Space Ventures*, 10 J. Space Law 107 (1982), in *Hearing*, at 226.

[25] Testimony of S. Neil Hosenball, General Counsel, National Aeronautics and Space Administration, in *Hearing*, at 11.

[26] Treaty of Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, January 27, 1967 [1962], 18 U.S.T. 2410.

[27] Kempf, *Reduction to Practice of Space Inventions*, 50 J. Patent Off. Soc. 105, 119–120 (1968), *Hearing*, at 180–181.

[28] Convention on International Liability for Damage Caused by Space Objects, March 29, 1972 [1973], 24 U.S.T. 2389.

[29] Convention on the Registration of Objects Launched into Outer Space, January 14, 1975 [1976], 28 U.S.T. 695.

[30] Beier and Stauder, *Space Stations and Intellectual Property Law* (1985), *(reprinted in Hearing*, at 67, 79).

and results of activities carried on in outer space, with such information to be disseminated. The contention that results of space activities cannot culminate in any rights of exclusivity might arguably be countered by the need to examine all of the space law treaties, which should be read together and which would require consideration of the points raised in the first posture.[31] Third, the treaty refers to claims of national sovereignty. Article VIII specifically provides that ownership of an item does not change. Presumably, tangible and intangible personal property would be treated alike. Under Article I of the Outer Space Treaty, the exploration and use of outer space is to be carried out for the benefit and in the interests of all countries. Such language "could be construed to mean that all discoveries, inventions, technical data, know-how, and improvements are not only to be made available to all countries, but that all countries may use such intellectual property." [32] However, the "common heritage" doctrine is highly controversial, with no apparent international community agreement as to its definition or legal effect.[33]

SECTION-BY-SECTION ANALYSIS

Section 1 of the bill provides the short title of the bill, "Patents in Space".

Section 2 contains two subsections. Subsection (a) contains amendments to title 35. Subsection (a)(1) contains a new section in title 35. Proposed section 105 provides that "Any invention made or used in outer space on an aeronautical and space vehicle * * * under the jurisdiction or control of the United States shall be considered made or used within the United States for purposes of this title." The terms "made" and "used" are intended to have the same meaning as used elsewhere in title 35. In this respect, "made" can refer either to the conception or first actual reduction or practice of an invention (e.g., as used in sections 104 or 201(g)), or to the making of an invention as used, e.g., in sections 154 or 271. The term "aeronautical and space vehicle" is defined in section 103(2) of the National Aeronautics and Space Act of 1985 (42 U.S.C. 2452(2)).

The term "jurisdiction or control" is intended to be consistent with the provisions of the Outer Space Treaty and the Registration Convention, i.e. that the country of registration of a space object under the Registration Convention is *prima facie* determinative of jurisdiction and the application of U.S. patent law. In cases where there is no registration pursuant to the Registration Convention, then the test of U.S. "control" should be used to determine application of U.S. patent law.

The purpose of the phrase "except with respect to any space vehicle or component thereof that is specifically identified and otherwise provided for by an international agreement to which the United States is a party" is to enable appropriate agreements on

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[31] *Id.*, at 70.

[32] Saragovitz, *The Law of Intellectual Property in Outer Space*, 17 IDEA 86, 97 (1975), in *Hearing*, at 374.

[33] See, e.g., Comment, *Law in a Vacuum: The Common Heritage Doctrine in Outer Space Law*, 7 Bost. Coll. Int'l & Comp. L. Rev. 403 (1984).

jurisdiction to be concluded between the United States and other launching states consistent with Article II of the Registration Convention.

The term "outer space" is intended to be read in conjunction with the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *610* U.N.S.T. *205* (effective October 10, 1967), and Outer Space, January 14, 1975, TIAS 8480.[34]

Subsection (a)(2) amends the table of sections.

Subsection (b) amends section 305 of the National Aeronautics and Space Act of 1958 to conform with the proposed section 105 of title 35.

Section 3 contains the effective date provisions. Subsection (a) contains the general rule with respect to effective date. This subsection provides that, subject to the exceptions in subsections (b) and (c) these amendments shall apply to all patents granted before, on, or after the date of the enactment. These amendments also apply, in general, to all applications for United States patents pending on or filed after such date of enactment.

Subsection (b) of section 3 provides that these amendments shall not affect any final decisions made by a court or the Patent and Trademark Office before the date of enactment with respect to a patent on an application for a patent provided no appeal from such decision is pending and the time for filing such an appeal has expired.

Subsection (c) provides that these amendments shall not affect the right of any party in any case pending in a court on the date of enactment to have the party's rights determined on the basis of the substantive law in effect before the enactment of this bill.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE
Washington, DC, August 12, 1986.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Rayburn House Office Building, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed H.R. 4316, a bill to amend title 35, United States Code, and the National Aeronautics and Space Act of 1958, with respect to the inventions in outer space, as ordered reported by the House Committee on the Judiciary, August 5, 1986.

H.R. 4316 would apply U.S. patent laws to activities that occur in outer space aboard a vehicle under the jurisdiction of the United

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[34] That treaty provides:

"1. When a space object is launched into orbit or beyond, the launching State shall register the space object by means of an entry in an appropriate registry which it shall maintain. Each launching State shall inform the Secretary-General of the United Nations of the establishment of such a registry.

"2. Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object in accordance with paragraph 1 of this article, bearing in mind the provisions of Article VIII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and without prejudice to appropriate agreements concluded or to be concluded among the launching States or jurisdiction and control over the space object and over any personnel thereof.

"3. The contents of each registry and the conditions under which it is maintained shall be determined by the State of registry concerned."

States, unless otherwise provided for by an international agreement.

Based on information from the Patent and Trademark Office and the National Aeronautics and Space Administration, CBO estimates that enactment of this bill will result in no significant additional costs to the Federal Government and in no cost to State or local governments.

If you wish further details on this estimate, we will be pleased to provide them.

With best wishes,

Sincerely,

RUDOLPH G. PENNER.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

TITLE 35. UNITED STATES CODE

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PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

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CHAPTER 10—PATENTABILITY OF INVENTIONS

Sec.
100. Definitions.
101. Inventions patentable.
102. Conditions for patentability; novelty and loss of right to patent.
103. Conditions for patentability; non-obvious subject matter.
104. Invention made abroad.
105. Inventions in outer space.

* * * * * * *

§ 105. Inventions in outer space

Any invention made or used in outer space on an aeronautical and space vehicle (as defined in section 103(2) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2452(2)) under the jurisdiction or control of the United States shall be considered to be made or used within the United States for purposes of this title, except with respect to any space vehicle or component thereof that is specifically identified and otherwise provided for by an international agreement to which the United States is a party.

* * * * * * *

SECTION 305 OF THE NATIONAL AERONAUTICS AND SPACE ACT OF 1958

PROPERTY RIGHTS IN INVENTIONS

SEC. 305. (a) * * *

* * * * * * *

(m) Any invention made or used in outer space on an aeronautical and space vehicle (as defined in section 103(2)) under the jurisdiction or control of the United States shall be considered to be made or used within the United States for purposes of this Act, except with respect to any space vehicle or component thereof that is specifically identified and otherwise provided for by an international agreement to which the United States is a party.

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